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EXAMINER

BELLO, AGUSTIN

ART UNIT PAPER NUMBER

2633

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8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/853,556

Applicant(s)

NEWELL ET AL.

Examiner

Agustin Bello

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,6,7. 6) ☐ Other: .

Art Unit: 2633

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 15, 19, and 20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of copending Application No. ^{854,153}09/853,556. Although the conflicting claims are not identical, they are not patentably distinct from each other because both applications recite an optical fiber communications system including an optical fiber, comprising: receiving low-speed channels, multiplexing of the low speed channels; and frequency division multiplexing the low-speed channels to produce an electrical high-speed channel for transmission across the communications system. The application differs from the claimed invention in that in that the 09/854,153 application in that the 09/853,556 application fails to specifically teach that a power adjustment is made to the low speed channels in order to compensate for dispersion in the system. However, making power adjustments to transmitted signals is very well known in the art and would have been obvious to one skilled in the art at the time the invention was made. One skilled in the art

Art Unit: 2633

would have been motivated to increase the power of the low speed channels of the 09/853,556 application in order to improve the overall fidelity of the system.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 7-9, 13, 15, 19, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Bodell (U.S. Patent No. 4,768,186).

Regarding claim 1, Bodell teaches an optical fiber communications system including a first node (reference numeral 1 in Figure 1) coupled to a second node (reference numeral 17 in Figure 1) by an optical fiber (reference numeral 9 in Figure 1), a method for transmitting overhead information from the first node to the second node, the method comprising: generating a control channel containing the overhead information (e.g. pilot tone or telemetry signal of column 4 lines 27-40); frequency division multiplexing (via multiplexer reference numeral 6 in Figure 1) the control channel with a plurality of electrical low speed channels to form an electrical high-speed channel; converting the electrical high-speed channel from electrical to optical form to form an optical high-speed channel (via reference numeral 8 in Figure 1); and transmitting the optical high-speed channel over the optical fiber (reference numeral 9 in Figure 1) to the second node.

Regarding claim 7, Bodell teaches that the overhead information includes information for controlling the second node (e.g. pilot tone or telemetry signal of column 4 lines 27-40).

Regarding claim 8, Bodell teaches that the overhead information includes information for configuring the second node (e.g. configuration of the gain of amplifiers 21-23 in column 4 lines 24-37 or configuration of various devices via the telemetry signals in column 4 lines 38-40).

Regarding claim 9, Bodell teaches that the overhead information includes diagnostic information from testing one of the nodes (e.g. "LASER TEMP, LASER BIAS, SENSORS" telemetry information transmitted from the first node to the second node).

Regarding claim 13, Bodell teaches receiving the optical high-speed channel (via fiber optic cable 9 in Figure 1); converting the optical high-speed channel from optical to electrical form (reference numeral 10 in Figure 1) to recover the electrical high-speed channel; and frequency division demultiplexing (via reference numeral 12 in Figure 1) the control channel from the electrical high-speed channel.

Regarding claim 15, Bodell teaches an optical fiber communications system for transmitting at least two low-speed channels across the communications system, the communications system comprising: a first node including: an FDM multiplexer (reference numeral 6 in Figure 1) for combining a control channel with the low-speed channels into an electrical high-speed channel (column 3 lines 13-30); and an E/O converter (reference numeral 8 in Figure 1) coupled to the FDM multiplexer for converting the electrical high-speed channel from electrical to optical form to form an optical high speed channel.

Regarding claim 19, Bodell teaches a second node coupled to the first node by an optical fiber (reference numeral 9 in Figure 1), the second node including: an O/E converter (reference

numeral 10 in Figure 1) for converting the optical high-speed channel to the electrical high-speed channel; and a FDM demultiplexer (reference numeral 12 in Figure 1) coupled to the O/E converter for frequency division demultiplexing the control channel from the electrical high-speed channel.

Regarding claim 20, Bodell teaches the second node further comprises: an FDM multiplexer (inherent from "From Master Group" in Figure 4 on right side) for combining a second control channel ("Telemetry" "Pilot Generator" in Figure 4 on right side) with second low speed channels into a second electrical high-speed channel; and an E/O converter ("Optical Converter" on right side of Figure 4) coupled to the FDM multiplexer for converting the second electrical high-speed channel from electrical to optical form to form a second optical high-speed channel; and the first node further comprises: an O/E converter ("Optical Receiver" on left side of Figure 4) for converting the second optical high-speed channel to the second electrical high-speed channel; and a FDM demultiplexer ("To Master Group" on left side of Figure 4) coupled to the O/E converter for frequency division demultiplexing the second control channel from the second electrical high speed channel.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-5, 10-12, 14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bodell.

Art Unit: 2633

Regarding claims 2 and 16, Bodell differs from the claimed invention in that Bodell fails to specifically teach that within the optical high-speed channel, the control channel is more robust than the low-speed channels to impairments in the optical fiber. However, it is well known in the art to use control channels that are more robust than other channels in the system. Generally, pilot signals provide a more robust transmission signal making transmission of control information over the pilot signal an attractive option. One skilled in the art would have been motivated to make the control channel more robust than the other channels in the system in order to ensure that control information is not lost in transmission for node to node. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to make the pilot signal of Bodell more robust than the other channels in the system.

Regarding claims 3 and 17, Bodell differs from the claimed invention in that Bodell fails to specifically teach that the control channel has a narrower frequency bandwidth than the low-speed channels. However, pilot signals such as that used by Bodell typically have a narrower frequency bandwidth than the other channels in the system since they are not required to carry as much information as the other channels in the system. One skilled in the art would have been motivated to make the control channel have a narrower frequency bandwidth than the low-speed channels in order to preserve much of the bandwidth of the system for wider bandwidth information carrying signals. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to make the pilot signal of Bodell narrower in frequency bandwidth than the low-speed channels.

Regarding claims 4 and 18, Bodell differs from the claimed invention in that Bodell fails to specifically teach that the control channel is than the low-speed channels. However, pilot

Art Unit: 2633

signals such as that used by Bodell are typically located at a lower frequency than that of the other channels in the system. One skilled in the art would have been motivated to locate the control channel of Bodell at a lower frequency than that of the low-speed channels in order to prevent interference between the control channels and the information bearing channels.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to locate the control channel of Bodell at a lower frequency than that of the low-speed channels.

Regarding claim 5, Bodell differs from the claimed invention in that Bodell fails to specifically teach that the control channel has a data rate of approximately 2 Mbps. However, Bodell could have transmitted the control channel at any desired rate including 2 Mbps. One skilled in the art would have been motivated to transmit the control channel at a rate of 2 Mbps in order to shorten the transmit time from node to node. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to transmit the control channel at a data rate of approximately 2 Mbps.

Regarding claim 10, Bodell fails to specifically teach that overhead information includes metrics from measuring a performance of a fiber link between the first node and the second node. However, Bodell teaches that the pilot signal is used to monitor and adjust the system (column 2 lines 47-49). Being that the system of Bodell is concerned with adjusting the power of the transmitted signals to compensate for losses due to propagating the signal through the optical channel (column 6 lines 1-11), Bodell appears to suggest that the pilot tone measure the performance of the fiber link between the first node and the second node and basis feedback signals to the transmitter based on the measurements. One skilled in the art would have been

motivated to include metrics from measuring a performance of a fiber link between the first node and the second node in order to make adjustments at the transmitter or receiver to compensate for particular metrics of the fiber link. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include metrics from measuring a performance of a fiber link between the first node and the second node.

Regarding claim 11, Bodell differs from the claimed invention in that Bodell fails to specifically teach that the overhead information includes information used for fault isolation. However, Bodell does teach that the nodes communicate loss of the pilot signal (as seen in Figure 4) where the loss of the pilot signal would indicate a fault in the system. Furthermore, this information is transmitted back and forth between the two nodes of the system, thereby indicating that it would have been possible to isolate a fault in the system. One skilled in the art would have been motivated to include information in the overhead information for fault isolation in order to determine the exact location of a fault in the system and to communicate this location to other nodes in the system. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include information in the overhead information for fault isolation.

Regarding claim 12, Bodell differs from the claimed invention in that Bodell fails to specifically teach that the overhead information includes information used to establish a fiber link between the first node and the second node. However, Bodell does include transmission of a telemetry signal between two nodes that include information such as laser temperature, laser bias, and sensor information. Furthermore, the nodes of Bodell also exchange feedback information to make adjustments to transmitter power levels to compensate for losses in the

Art Unit: 2633

system. In exchanging this information between nodes, it is clear that the nodes use the information to establish a fiber link between the nodes. One skilled in the art would have been motivated include information used to establish a fiber link between the first node and the second node in overhead information in order to have the nodes communicate according to the same parameters. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include information used to establish a fiber link between the first node and the second node in overhead information.

Regarding claim 14, Bodell teaches generating a second control channel (e.g. pilot and telemetry signals from right side of bi-directional system in Figure 4) containing second overhead information; frequency division multiplexing the second control channel with a second plurality of electrical low-speed channels to form a second electrical high-speed channel (as seen by the combining of the pilot and telemetry signals in Figure 4); converting the second electrical high-speed channel from electrical to optical form to form a second optical high-speed channel (via the optical transmitter on the right side of Figure 4); and transmitting the second optical high-speed channel over an optical fiber from the second node to the first node (as seen in Figure 4). Bodell differs from the claimed invention in that Bodell fails to specifically teach a second optical fiber. However, the use of a second optical fiber for bidirectional transmission systems such as that of Bodell is well known in the art. One skilled in the art would have been motivated to use a second fiber in order to prevent collision between counter-propagating signals. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use a second fiber for transporting signals back from a second node to a first node.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bodell in view of Hubinette (U.S. Patent No. 6,289,511).

Regarding claim 6, Bodell differs from the claimed invention in that Bodell fails to specifically teach that the overhead information includes software to be loaded onto the second node. However, transmission of software to be loaded onto a second node via overhead information is well known in the art. Hubinette teaches it is well known in the art to transmit software to be loaded onto a second node via overhead information (column 4 lines 5-21). One skilled in the art would have been motivated to transmit software to be loaded onto a second node via overhead information in order to preserve much of the bandwidth of the system for wider bandwidth information carrying signals. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to transmit software to be loaded onto a second node via overhead information.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sakanaka, Foschini, Simokat, Lemson, Bae.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.


Application/Control Number: 09/853,556

Page 11

Art Unit: 2633

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

AB



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